

Appl. No.09/893,033
Amdt. Dated June 2, 2005
Reply to Office Action of February 7, 2005

Docket No.: 100/00-01

BEST AVAILABLE COPY**Amendments to the Claims**

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

38-39 (canceled)

41-48 (canceled)

52-53 (canceled)

55-62 (canceled)

84-88 (canceled)

89.(New) An isolated and purified polynucleotide, encoding an acetohydroxyacid synthase (AHAS) large subunit gene, wherein the polynucleotide comprises the sequence of SEQ ID NO:6, and wherein the polynucleotide confers resistance to an herbicide selected from the group consisting of an imidazolinone, a sulfonylurea, and a sulfanylcarboxamide.

90.(New) The isolated and purified polynucleotide according to claim 89, wherein the polynucleotide is isolated and purified from the cyanobacterium *Synechocystis* PCC 6803.

91.(New) A replicable expression vector comprising the polynucleotide of claim 89.

92.(New) A nuclear genome comprising the replicable expression vector of claim 91.

93.(New) A plastome comprising the replicable expression vector of claim 91.

94.(New) A transgenic plant produced from the transformation of a plant with the replicable expression vector of claim 91.

95.(New) Progeny derived from the transgenic plant according to claim 94.

96.(New) The transgenic plant according to claim 94, wherein said transgenic plant exhibits increased resistance to an herbicide selected from the group consisting of an imidazolinone, a sulfonylurea, and a sulfanylcarboxamide.

97.(New) The replicable expression vector according to claim 91, wherein said replicable expression vector is a construct for nuclear genome transformation comprising an *Arabidopsis*

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AHAS large subunit promoter and transit sequence, the *Synechocystis* AHAS large subunit coding region, and an *Arabidopsis* AHAS large subunit termination sequence.

98.(New) An isolated and purified polynucleotide encoding an acetohydroxyacid synthase (AHAS) small subunit gene, wherein the polynucleotide comprises the sequence of SEQ ID NO:17, and wherein the polynucleotide confers resistance to an herbicide selected from the group consisting of an imidazolinone, a sulfonylurea, and a sulfanylcarboxamide.

99.(New) The isolated and purified polynucleotide according to claim 98, wherein the polynucleotide is isolated and purified from the cyanobacterium *Synechocystis* PCC 6803.

100.(New) A replicable expression vector comprising the polynucleotide of claim 98.

101.(New) A nuclear genome comprising the replicable expression vector of claim 100.

102.(New) A plastome comprising the replicable expression vector of claim 100.

103.(New) A transgenic plant produced from transformation of a plant with the replicable expression vector according to claim 100.

104.(New) Progeny derived from the transgenic plant according to claim 103.

105.(New) The transgenic plant according to claim 103, wherein said transgenic plant exhibits resistance to an herbicide selected from the group consisting of an imidazolinone, a sulfonylurea, and a sulfanylcarboxamide.

106.(New) The replicable expression vector according to claim 100, wherein said replicable expression vector is a construct for nuclear genome transformation comprising an *Arabidopsis* AHAS large subunit promoter and transit sequence, the *Synechocystis* AHAS small subunit coding region, and an *Arabidopsis* AHAS large subunit termination sequence.

107. (New) A method of producing a transgenic plant having increased resistance to an herbicide as compared to an untransformed wild type plant, comprising

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- a. transforming a plant cell with a replicable expression vector comprising a polynucleotide sequence selected from a group consisting of SEQ ID NO:6 and SEQ ID NO:17; and
- b. generating from the plant cell a transgenic plant that expresses the polynucleotide sequence.

108. (New) The method of claim 107, wherein the polynucleotide sequence is SEQ ID NO:6.

109. (New) The method of claim 107, wherein the polynucleotide sequence is SEQ ID NO:17.

110. (New) The method of claim 107, wherein the replicable expression vector is a nuclear transformation vector.

111. (New) The method of claim 107, wherein the replicable expression vector is a plastid transformation vector.